

INFLUENCE OF REACTIONS ON TEMPERATURE 45

or 0.3610, one obtains

placing this at the value for 1,400° 5.86x0.8610=1.895, and hence

the temperature is 1,895° U

This figure is also not correct, since the basis for the calculation was not correctly selected, owing to the carbon bringing into the reaction zone not 313 calories (corresponding to a temperature of 1,150°), but more, as the temperature of reaction will be higher. Further following up of the problem, however, is saved, as the calculations already made show that the requisite temperature of 1,150° is not only attainable, but is considerably exceeded. This is in accordance with observations made in practice, whereby a producer driven by means of air alone is not able to run cold. It more often heats itself considerably above 1,150°, and this circumstance is the cause why most fuels cannot be gasified by means of air alone. The temperature becomes so high that the constituents of the ashes melt, or sinter together, and form great lumps, which bring the producer to a stop, as their removal becomes impossible. The results obtained are obviously able to be made into a heat balance-sheet.

HEAT BALANCE-SHEET FOR PURE AIR-GAS PRODUCTION.

Heat Units generated in the Producer.

Heat Units absorbed in the reaction zone of the Producer.

Calories.

Calories.

1. Heat content of 1 kilogramme of gas at 313°	Heat content of 5.36 cubic metres of gas at 1,150°
= 313	= 2,700

2. Combustion value of do. = 8,080

3. Heat content of air = Nil.

Total supply of heat = 8,393

Combustible value of 1.86 cubic metre CO = 5,693 Total heat in reaction zone 8,393

(c) INFLUENCE OF THE PRODUCTS OF GAS PRODUCTION ON THE TEMPERATURE OF REACTION.

On p. 43 it has been shown that by the combustion of 1 kilogramme C to CO, 2,387 calories are evolved, whilst measured under normal conditions, 1.86 cubic metre CO is generated.

One can thus also say that the generation of 1.86 cubic metre CO involves that in the reaction space 2,387 calories